Impact of Industrialization on Physical Environment of Ranchi District

SYNOPSIS FOR THE Ph.D REGISTRATION IN GEOGRAPHY

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1. A Brief Introduction of the Research Topic

The Ranchi district is named after its headquarter, Ranchi, which is also the capital city of Jharkhand. Ranchi district is surrounded by other districts such as Khunti, Ramgarh, Hazaribagh, and Lohardaga. The economy of the district is primarily based on agriculture, but the district is also growing as a industrial hub.

Industrialization leads to economic growth, increase productivity, and improve living standards of the people of that region. Industrialization refers to the process of developing industries and transitioning from a rural economy to the manufacturing and production based economy. Industrialization has its challenges and negative effects on environment also.

The environment is the natural surroundings, in which living organisms exist. Environmental pollution is a major problem in today's world. Industrialization is responsible for many types environmental issues.

Development is a continuous process, and at present industries are the symbol of the development. The relationship between industry and physical environment is a complex issue but industry is compulsory for economic growth and development. Industrial activities have significant effects on the environment which includes pollution, depletion of natural resources etc. Industries are responsible for the pollution because they release harmful substances into air, water, and soil. Industries are also responsible for the depletion of natural resources because they mostly depend on non-renewable resources.

2. State of the Art

Industrial geography is a sub-discipline of economic geography. Industry is known for production of goods and services. Industrial geography has traditionally been defined as the spaces, places, and geographical circulation of industry. It deals with the spatial arrangement of manufacturing or secondary activities. Industrial geography encompasses not only the location of manufacturing or secondary activities but also the broader processes of structural change in the production of goods and services and various ways in which space, place, and geographical circulation are part of these processes. Since 1970 research in industrial geography has expanded dramatically.

Ranchi district is situated on Chotanagpur plateau which is located at 23°15'N to 23°27'N latitude and 85°15'E to 85°25'E longitude. Total geographical area of Ranchi district is 5,097 km². It is the 3rd biggest district by area in Jharkhand.

The industrial areas developed around Ranchi district fall in the Upper Subarnarekha Basin Industrial Region. This region has the advantage of transport system, availability of raw material, water, labour and power of DVC.

Major industrial areas are:-

Tupudana industrial area, Kokar industrial area, Namkum industrial area, Tatisilwai industrial area, Getalsud industrial area, Hotwar, Saher (Nagari) industrial area, Dardag and Chkala Ormanjhi industrial area, Chapawar Ormanjhi industrial area, Barhe (Chanho) industrial area, Silk Para Irba, Irba (Ormanjhi) industrial area, Koilari (Ormanjhi) industrial area, Sarwal industrial area, Kulhi (Ormanjhi) industrial area, Burmu (Chakme) industrial area.

Main industries are:- Usha Martin, High tension insulator factory, Waxpol industry, Shree Ram ball bearing industry, Ranchi Distillery etc.

Main cottage industri are:- Handloom, saw mills, roap making, basket making, broom making, mat making etc.

There are so many kinds of risk which are related with the adoption and development of industry. There is a lack of proper infrastructure in India. Industry needs the fast-paced technology trends. Industry causes air pollution which is responsible for negative impact on environment. Some industries are based on fossil fueled power plants, industrial furnaces of iron and steel industries. Photochemical pollution is very dangerous to environment. Some industrial activities may cause a particular type of air pollution which is the reason of local environmental problem.

The term 'environmental geography' makes a strong relation between human geography and physical geography. Rapid industrialization causes hazards in the form of pollution which has affected environment. Geography is basically concerned with question about places and their description. Environmental conditions are undoubtedly casual factors affecting human health which cause diseases. Thus status of the environment is often the status of the health of the community. Therefore understanding environmental aspects are very basic. There are several disciplines, which help in the study of health of environment and Geography is one of them. No doubt industry plays an important role in environmental pollution. Different types of industrial activities release harmful substances into the environment, causing pollution of soil, air and water.

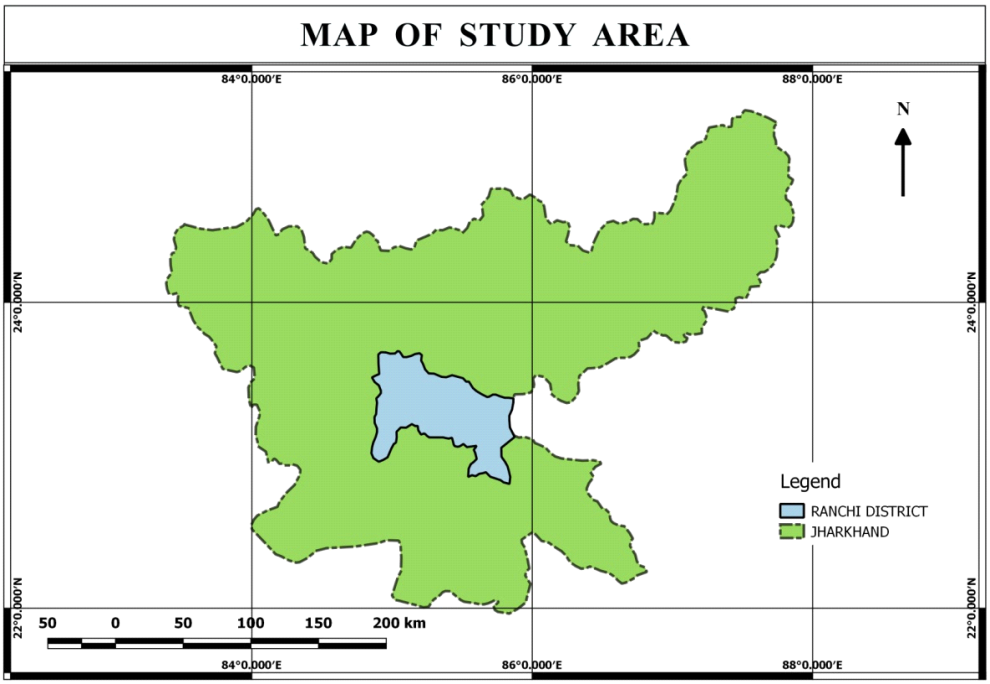
According to Pandeya P. (1970), “In respect of iron and steel, coal, electricity, water supply ect. H.E.C. is suitably located at Ranchi. Ranchi is situated in the heart of Chotanagpur Plateau on the Subarnarekha river. In regards to the three steel plants, in the public sector, Rourkela, Bhilai and Durgapur, and the two very large ones in the private sector (Jamshedpur and Kulti), Ranchi has an almost central location. The Damodar valley coalfields are hardly 75 miles from Ranchi.”

According to Singh Prabhunath (1979), “Training in material management should be given greater importance, and the efforts should be have fully trained staff in the material management organizations.”

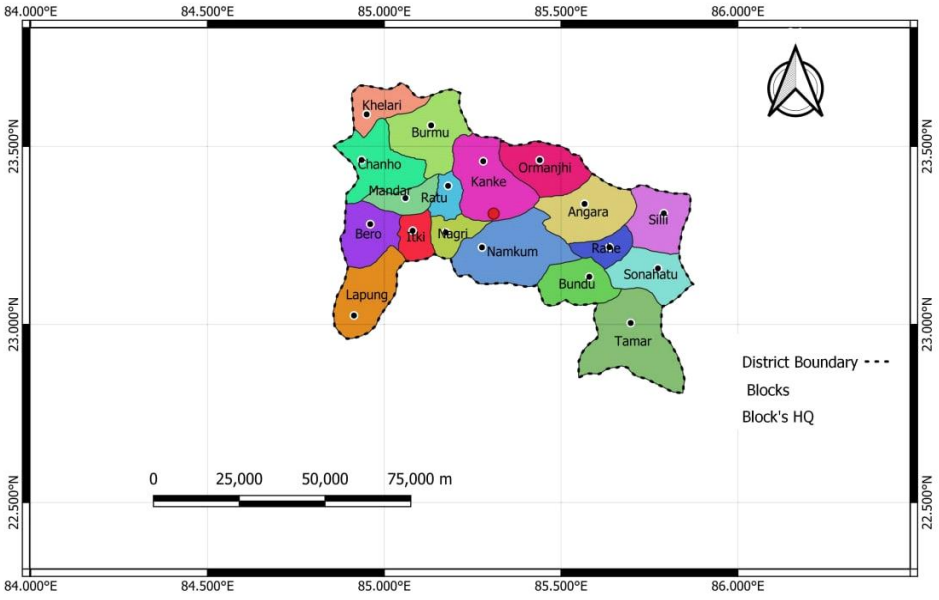
According to Gupta Mitali Das (2015), “The clustered development of industries at a limited space has been a significant feature of modern industrial landscape. Such concentration gives rise to economies of production, encourage efficiency.”

According to Desai J.J. (2018), “In some cities, industrial, residential and commercial areas are mixed and thus all waste gets intermingled. The volume of per capita waste is increasing with the income level due to higher consumption.”

Jharkhand Economic Survey (2021-22), “As a result, lots of industries have invested their CSR fund in upgrading Anganwadis through revolution, providing them equipment and utensils and also training the front-line workers working here.”



ADMINISTRATIVE MAP OF RANCHI DISTRICT



Census of India (2011)

3. Problems to be Investigated

The major issue of the research problem may be raised as:-

1. To what extent the industrialization affects the development of surrounding areas.

2. To what extent the industrial development affects environment.

3. Whether the development of industries polluted environment and changed the life of local inhabitants.

4. What could be a good suggestion to control negative impact of industries on environment.

4. Objective of the Investigation and Motivation

The main objectives are:

1. To find out the impact of industrialization on physical environment.

2. To study the trends of development of industrialization in Ranchi District.

3. To analyze major industrial factors influencing pollution.

4. To offer suitable suggestions based on the findings of the study.

At present, Jharkhand has important industrial regions and Ranchi district is one of them. Physical environment of Ranchi district is facing pollution due to industrial development. So, it is important to know the spatial distribution of industries and their impact on the physical

environment. Development is a continuous process and industries are also growing continuously therefore it is important to reduce the negative impact of industries on environment. This research work will also focus on the measure and suggestion to control negative impact on the physical environment.

5. Research Hypothesis or Research Questions

1. Industrialization has an impact on physical environment.

2. What are the trends of development of industrialization in Ranchi District ?

3. What are the major industrial factors influencing pollution ?

6. Research Design and Methodology

(a) Selection of the Field

Jharkhand is known for its minerals and industries. Ranchi district also has some important industrial areas. So, Ranchi district is a good study area to study the impact of industrial development on environment. Ranchi district is situated on Chotanagpur plateau. Presently Ranchi district has 18 blocks. Ranchi, the capital of Jharkhand is situated in Ranchi district. It is one of the major industrial areas of Eastern India.

(b) Sample Size and Selection of Informants

There are 18 major industrial areas in Ranchi district. 4 industrial areas where more industrialization has taken place will be selected for sampling and 15 samples will be taken from each of them. Selection of informants will be done by purposive sampling methods. 15 head of the families of 4 major industrial areas, total 60 families will be selected to ask few questions related to impact of industry on their daily life. Other than these families NGOs (Non-Governmental Organisations) of those 4 selected industrial areas will also be questioned.

Tentative Chapterisation:

Introduction

Chapter I - Geographical Background

Chapter II - Trends of Industrialization in Ranchi District

Chapter III - Major Industrial Areas

Chapter IV - Industrial Development and Impact on Physical Environment

Chapter V - Industrial Waste and their Impact on Physical Environment

Chapter VI - Measures to Reduce Physical Environmental Problems

Conclusion and Suggestion

Reference

Bibliography

7. Sources of Data and Tools to be Used in the Collection of Data

Primary data and secondary data both will be collected for conducting research. Base maps will be prepared from survey of India's topographical maps on the required scale. Primary data will be based on interview, questionnaire and discussion with authorized persons and inhabitants. Unpublished data and materials will be collected from research thesis, report of institutions, lecture from seminars, and symposium etc. Published data will be collected from various reports, statistical periodicals of government media, bulletins, books, and other published materials. It will also include computerized data. The methods and approaches for the study are observational, statistical, and descriptive. Scientific and methodological information is very important to know the impact of industrial development on environment. Research work is based on field work and collection, compilation and analysis of data. Secondary data will be collected from district census handbook, District Gazetteer, governmental publications. Maps can be taken from thematic maps prepared by National Atlas and Thematic Mapping Organization (NATMO) and Survey of India. Data will be also collected from Revenue Department, Jharkhand Industrial Area Development Authority. Published and unpublished research works by different scholars, books, articles on related topic are very significant in this study. According to situation and requirement schedule, questionnaires and interview methods will be used in this survey.

8. Analysis of Data

Inferential statistical analysis will be used for hypothesis testing.

Map analysis will be based on spatial point pattern analysis which looks at the spatial arrangement of the locations of objects.

The analysis of industrial pollution will be done through GIS and Remote sensing approach.

For Environment Impact Assessment (EIA) help will be taken from authentic organizations specially located in Ranchi or nearby Ranchi.

9. Significance of the Study

Ranchi district is known for cheap native labour, good transport network, availability of forest products and minerals, which are important for development of many industries.

It is a topic of research having importance because the environment and human health is affected by industrial development and it is a global issue.

It is true that industrial development is necessary for country's economic development but protection of environment is also important because humans are directly affected by environment. The researcher wants to disclose how the industries cause bad environmental conditions.

10. It's Relevance to the Present Day Problem and Needs to the Society

Ranchi district has some important industrial area. All kind of industries have affected its surroundings in many ways (economically, socially, environmentally). There is no doubt that environment is also a very important topic in present day situation of rapid industrialization. Small scale industries also include many kind of negative impact on its neighbour area. There is need of awareness among the people about all negative impact of development to take extra care of environment related issues. Physical environment is getting polluted by industries and it is a serious problem which needs solutions.

11. Contribution to the Existing Knowledge

Industries affect the environment. This study work focuses on spatial pattern of industry as well as their impact on inhabited areas. There is no doubt that industry affects environment. This research will also include environmental condition in major industrial areas. Study will also focus on measures and prevention of industrial pollution. Some good kind of planning and management can also reduce negative effects of industries. Welfare program can also play important role in industrial inhabited areas.

12. Future Work

1. Scope of more sustainable industrial development.

2. Problems and prospects of urbanization and industrialization.

3. Negative impact of industrialization in urban environment.

4. Impact of industrial development in acid rain.

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